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(71) Applicant: NOKIA WIRELESS ROUTERS, INC.
[US/US]: 785 Castro Street, Suite A. Mountain View, CA
94041 (US).

(72) Inventors: BEYER, David, A.; 468 Paco Drive. Los Altos, CA 94024 (US). GARCIA-LUNA-ACEVES.

Joaquin; 82 Lakewood Circle, San Mateo, CA 94402 (US). FULLMER, Chane, L.; P.O. Box 759, Santa Cruz, CA 95061 (US).

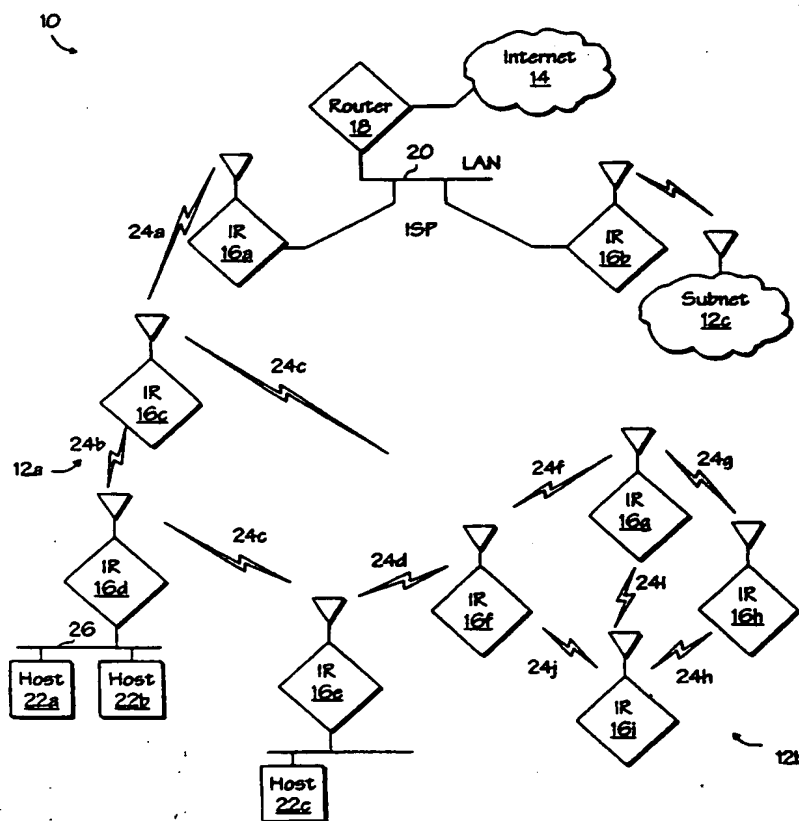
(74) Agents: FAHMI, Tarek, N. et al.; Blakely, Sokoloff, Taylor & Zafman LLP, 7th floor, 12400 Wilshire Boulevard, Los Angeles, CA 90025 (US).

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[Continued on next page]

(54) Title: ADAPTIVE COMMUNICATION PROTOCOL FOR WIRELESS NETWORKS



(57) Abstract: A communication protocol that provides link-level and media access control (MAC) level functions for wireless (e.g., ad-hoc) networks and is robust to mobility or other dynamics, and for scaling to dense networks. In a mobile or otherwise dynamic network, any control-packet collisions will be only temporary and fair. In a dense network, the network performance degrades gracefully, ensuring that only a certain percentage of the common channel is consumed with control packets. The integrated protocol allows packets (e.g., data scheduling control packets) to be scheduled in a collision-free and predictable manner (known to all neighbors), multicast packets can be reliably scheduled, as well as streams of delay- or delay-jitter-sensitive traffic. Further, using an optional network code, the scheduling of control packets can appear to observers to be randomized.

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7 December 2000

- With international search report.
- Before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments.

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

Int. Application No.

PCT/US 99/21238

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04L12/56

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04L H04Q H04J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

WPI Data, PAJ, EPO-Internal, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

A document defining the general state of the art which is not considered to be of particular relevance

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P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

S document member of the same patent family

Date of the actual completion of the international search

19 September 2000

Date of mailing of the international search report

04.10.2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Vaskimo, K

INTERNATIONAL SEARCH REPORT

In: International Application No

PCT/US 99/21238

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 99/21238

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 99/21238

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-8, as far as relating to the first invention

A method, where a node finds out that it is the only node by transmitting request packets on each communication channel, and where said node establishes itself as a single station network.

2. Claims: 1,9-18, as far as relating to the second invention

A method for synchronization.

3. Claims: 19-59

A method for scheduling transmissions.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 99/21238

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